AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-5 (Canceled).

6. (Currently amended) A method of analyzing noise content in a digital image, the method comprising:

identifying regions of approximately constant pixel value within the digital image;

selecting a predetermined number of said identified regions based on pixel value variances within each said identified region;

analyzing said selected regions to generate a mathematical model of noise present in the digital image, wherein said analyzing said selected regions to generate a mathematical model of the noise present in the digital image comprises:

processing each selected region to remove a mean pixel value from each pixel in the selected region and obtain an approximation of the noise in each selected region,

analyzing the power spectral density (PSD) of the noise in said selected regions,

generating a parametric model of the noise present in the digital image based on said PSD of the noise in said selected regions, wherein said generating a parametric model of the noise present in the digital image based on said PSD for each selected region comprises:

taking a discrete Fourier transform of each noise sample, and

squaring each resulting frequency component to produce a periodogram,

averaging together the periodograms; and

selecting a best-fit linear combination of a small set of predefined PSDs.

7. (Previously presented) The method of claim 6, wherein said identifying regions of approximately constant pixel value within the digital image comprises:

defining a plurality of regions in the digital image;

discarding any of said defined regions in which pixel values are saturated or clipped to generate a set of remaining regions;

analyzing said remaining regions to determine variation among pixel values within each remaining region; and

identifying said remaining regions having lower variation among pixel value.

8. (Previously presented) The method of claim 7, wherein said defining a plurality of regions comprises allowing a user to select said regions.

9. (Previously presented) The method of claim 7, wherein said defining a plurality of regions comprises:

setting a region size for each of said plurality of regions; and

using a random sampling pattern such that said plurality of regions include approximately all of the pixels in the digital image.

10. (Currently amended) The method of claim 9, wherein said region size for each of said plurality of regions is ~~about~~ between 16 ~~to~~ and 32 pixels square.

11. (Previously presented) The method of claim 7, wherein said discarding any of said defined regions in which pixel values are saturated or clipped comprises:

computing the average and standard deviation of all pixels in all samples; and

discarding those regions having an average value that is greater than one standard deviation from the overall average.

12. (Previously presented) The method of claim 6, wherein said identifying regions of approximately constant pixel value comprises allowing a user to select said regions.

13. (Currently amended) The method of claim 6, wherein said predetermined number of identified regions comprises ~~about~~ between 5 ~~to~~ and 10 regions.

14. (Currently amended) The method of claim 6, wherein said predetermined number of identified regions comprises ~~about~~ 7 regions.

15 (Canceled).

16. (Currently amended) The method of ~~claim 15~~claim 6, wherein said analyzing the power spectral density of the noise in said selected regions comprises:

applying an auto correlation function (ACF) model to the noise present in each selected region; and

applying a discrete Fourier transform to the ACF model for each selected region to obtain a PSD for the noise in each selected region.

17 (Canceled).

18. (Previously presented) The method of claim 6, wherein the pixel value is a vector that includes multiple values or channels and each channel is analyzed independently.

19. (Previously presented) The method of claim 18, further comprising using a decorrelating transform to uncorrelate any channels that are initially correlated.

20. (Previously presented) The method of claim 6, wherein the pixel value is a vector that includes multiple values or channels and each channel is analyzed independently and simultaneously.

21. (Previously presented) The method of claim 6, wherein the digital image comprises a plurality of frames and each frame is analyzed independently and simultaneously.

22. (Previously presented) The method of claim 6, further comprising performing a homomorphic transformation on each pixel value prior to the analysis and a reverse transformation following the analysis.

23. (Currently amended) A computer readable medium containing computer executable instructions for analyzing noise content in a digital image, which, when operating in a processor cause the processor to perform the functions of:

identifying regions of approximately constant pixel value within the digital image;

selecting a predetermined number of said identified regions based on pixel value variances within each said identified region;

analyzing said selected regions to generate a mathematical model of noise present in the digital image, wherein said analyzing said selected regions to generate a mathematical model of the noise present in the digital image comprises:

processing each selected region to remove a mean pixel value from each pixel in the selected region and obtain an approximation of the noise in each selected region,

analyzing the power spectral density (PSD) of the noise in said selected regions,

generating a parametric model of the noise present in the digital image based on said PSD of the noise in said selected regions, wherein said generating a parametric model of the noise present in the digital image based on said PSD for each selected region comprises:

taking a discrete Fourier transform of each noise sample, and

squaring each resulting frequency component to produce a periodogram,

averaging together the periodograms; and

selecting a best-fit linear combination of a small set of predefined PSDs.

24. (Previously presented) The computer readable medium of claim 23, wherein said identifying regions of approximately constant pixel value within the digital image comprises:

defining a plurality of regions in the digital image;

discarding any of said defined regions in which pixel values are saturated or clipped to generate a set of remaining regions;

analyzing said remaining regions to determine variation among pixel value within each remaining region; and

identifying said remaining regions having lower variation among pixel value.

25. (Currently amended) The computer readable medium of claim 24, wherein said defining a plurality of regions comprises:

setting a region size of ~~about~~ between 16 ~~to~~ and 32 pixels square for each of said plurality of regions; and

using a random sampling pattern such that said plurality of regions include approximately all of the pixels of the digital image.

26. (Previously presented) The computer readable medium of claim 24, wherein said discarding any of said defined regions in which pixel values are saturated or clipped comprises:

computing the average and standard deviation of all pixels in all samples; and

discarding those regions having an average value that is greater than one standard deviation from the overall average.

27. (Currently amended) The computer readable medium of claim 23, wherein said predetermined number of identified regions comprises ~~about~~ between 5 ~~to~~ and 10 regions.

28 (Canceled).

29. (Currently amended) The computer readable medium of ~~claim 28~~claim 23, wherein said analyzing the power spectral density of the noise in said selected regions comprises:

applying an auto correlation function (ACF) model to the noise present in each selected region; and

applying a discrete Fourier transform to the ACF model for each selected region to obtain a PSD for the noise in each selected region.

30 (Canceled).

31. (Previously presented) The computer readable medium of claim 23, wherein the pixel value is a vector that includes multiple values or channels and each channel is analyzed independently.

32. (Currently amended) A software program product for use with a processor, the software program product comprising processor readable program code for analyzing noise content in a digital image, wherein when said processor readable program code is executed in a processor, said processor readable program code causes said processor to perform the functions of:

identifying regions of approximately constant pixel value within the digital image;

selecting a predetermined number of said identified regions based on pixel value variances within each said identified region;

analyzing said selected regions to generate a mathematical model of noise present in the digital image, wherein said analyzing said selected regions to generate a mathematical model of the noise present in the digital image comprises:

processing each selected region to remove a mean pixel value from each pixel in the selected region and obtain an approximation of the noise in each selected region,

analyzing the power spectral density (PSD) of the noise in said selected regions,

generating a parametric model of the noise present in the digital image based on said PSD of the noise in said selected regions, wherein said generating a parametric model of the noise present in the digital image based on said PSD for each selected region comprises:

taking a discrete Fourier transform of each noise sample, and

squaring each resulting frequency component to produce a periodogram,

averaging together the periodograms; and

selecting a best-fit linear combination of a small set of predefined PSDs.

33. (Previously presented) The software program product of claim 32, wherein said identifying regions of approximately constant pixel value within the digital image comprises:

defining a plurality of regions in the digital image;

discarding any of said defined regions in which pixel values are saturated or clipped to generate a set of remaining regions;

analyzing said remaining regions to determine variation among pixel value within each remaining region; and

identifying said remaining regions having lower variation among pixel value.

34. (Previously presented) The software program product of claim 33, wherein said defining a plurality of regions comprises:

setting a region size for each of said plurality of regions; and

using a random sampling pattern such that said plurality of regions include approximately all of the pixels in the digital image.

35. (Currently amended) The software program product of claim 34, wherein said region size for each of said plurality of regions is ~~about~~ between 16 ~~to~~ and 32 pixels square.

36. (Previously presented) The software program product of claim 33, wherein said discarding any of said defined regions in which pixel values are saturated or clipped comprises:

computing the average and standard deviation of all pixels in all samples; and

discarding those regions having an average value that is greater than one standard deviation from the overall average.

37. (Previously presented) The software program product of claim 32, wherein said identifying regions of approximately constant pixel value comprises allowing a user to select said regions.

38. (Currently amended) The software program product of claim 32, wherein said predetermined number of identified regions comprises ~~about~~ between 5 ~~to~~ and 10 regions.

39. (Currently amended) The software program product of claim 32, wherein said predetermined number of identified regions comprises ~~about~~ 7 regions.

40 (Canceled).

41. (Currently amended) The software program product of ~~claim 40~~claim 32, wherein said analyzing the power spectral density of the noise in said selected regions comprises:

applying an auto correlation function (ACF) model to the noise present in each selected region; and

applying a discrete Fourier transform to the ACF model for each selected region to obtain a PSD for the noise in each selected region.

42. (Currently amended) The software program product of ~~claim 40~~claim 32, wherein said analyzing the power spectral density of the noise in said selected regions comprises:

applying an auto correlation function (ACF) model to the noise present in each selected region; and

applying a discrete Fourier transform to the ACF model for each selected region to obtain a PSD for the noise in each selected region.

43 (Canceled).

44. (Previously presented) The software program product of claim 32, wherein the pixel value is a vector that includes multiple values or channels and each channel is analyzed independently.

45. (Previously presented) The software program product of claim 44, further comprising using a decorrelating transform to uncorrelate any channels that are initially correlated.

46. (Previously presented) The software program product of claim 32, wherein the pixel value is a vector that includes multiple values or channels and each channel is analyzed independently and simultaneously.

47. (Previously presented) The software program product of claim 32, further comprising:

performing a homomorphic transformation on each pixel value prior to the analysis and a reverse transformation following the analysis.

48. (Currently amended) A method of analyzing noise content in a digital image, the method comprising:

identifying regions of approximately constant pixel value within the digital image, wherein said identifying comprises:

defining a plurality of regions in the digital image;

discarding any of said defined regions in which pixel values are saturated or clipped to generate a set of remaining regions;

analyzing said remaining regions to determine variation among pixel value within each remaining region; and

identifying said remaining regions having lower variation among pixel value;

selecting a predetermined number of said identified regions based on pixel value variances within each said identified region;

analyzing said selected regions to generate a mathematical model of noise present in the digital image, wherein said analyzing said selected regions to

generate a mathematical model of the noise present in the digital image comprises:

processing each selected region to remove a mean pixel value from each pixel in the selected region and obtain an approximation of the noise in each selected region,

analyzing the power spectral density (PSD) of the noise in said selected regions,

generating a parametric model of the noise present in the digital image based on said PSD of the noise in said selected regions, wherein said generating a parametric model of the noise present in the digital image based on said PSD for each selected region comprises:

taking a discrete Fourier transform of each noise sample, and

squaring each resulting frequency component to produce a periodogram,

averaging together the periodograms; and

selecting a best-fit linear combination of a small set of predefined PSDs.

49. (Previously presented) The method of claim 48, wherein said defining a plurality of regions comprises:

setting a region size for each of said plurality of regions; and

using a random sampling pattern such that said plurality of regions include approximately all of the pixels in the digital image.

50. (Currently amended) The method of claim 48, wherein said predetermined number of identified regions comprises ~~about~~ between 5 ~~to~~ and 10 regions.

51 (Canceled).

52. (Currently amended) The method of ~~claim 51~~claim 48, wherein said analyzing the power spectral density of the noise in said selected regions comprises:

applying an auto correlation function (ACF) model to the noise present in each selected region; and

applying a discrete Fourier transform to the ACF model for each selected region to obtain a PSD for the noise in each selected region.

53 (Canceled).